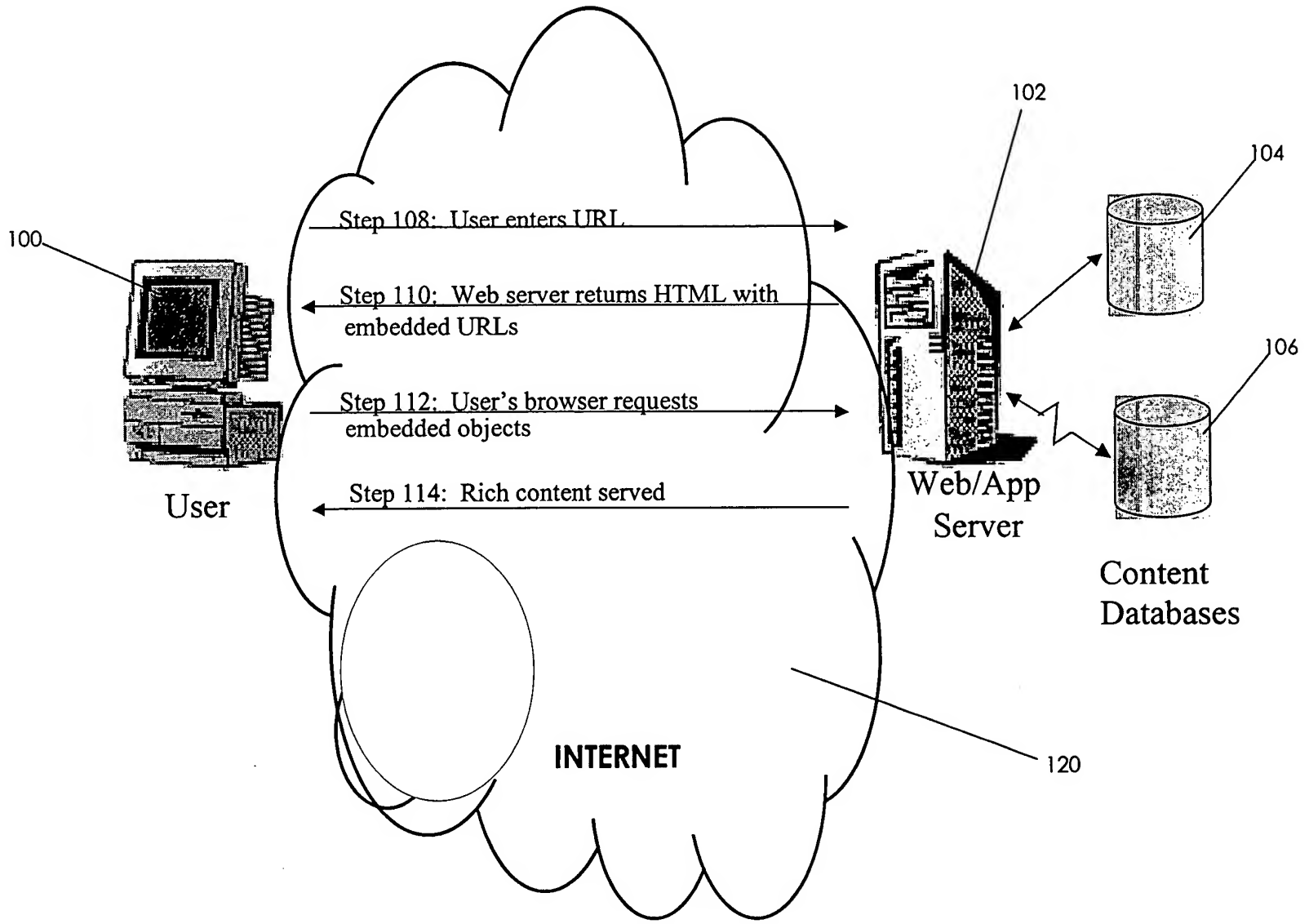

100
102
104
106
Step 108: User enters URL
Step 110: Web server returns HTML with embedded URLs
Step 112: User's browser requests embedded objects
Step 114: Rich content served
User
Web/App Server
Content Databases
INTERNET
120

Fig. 1

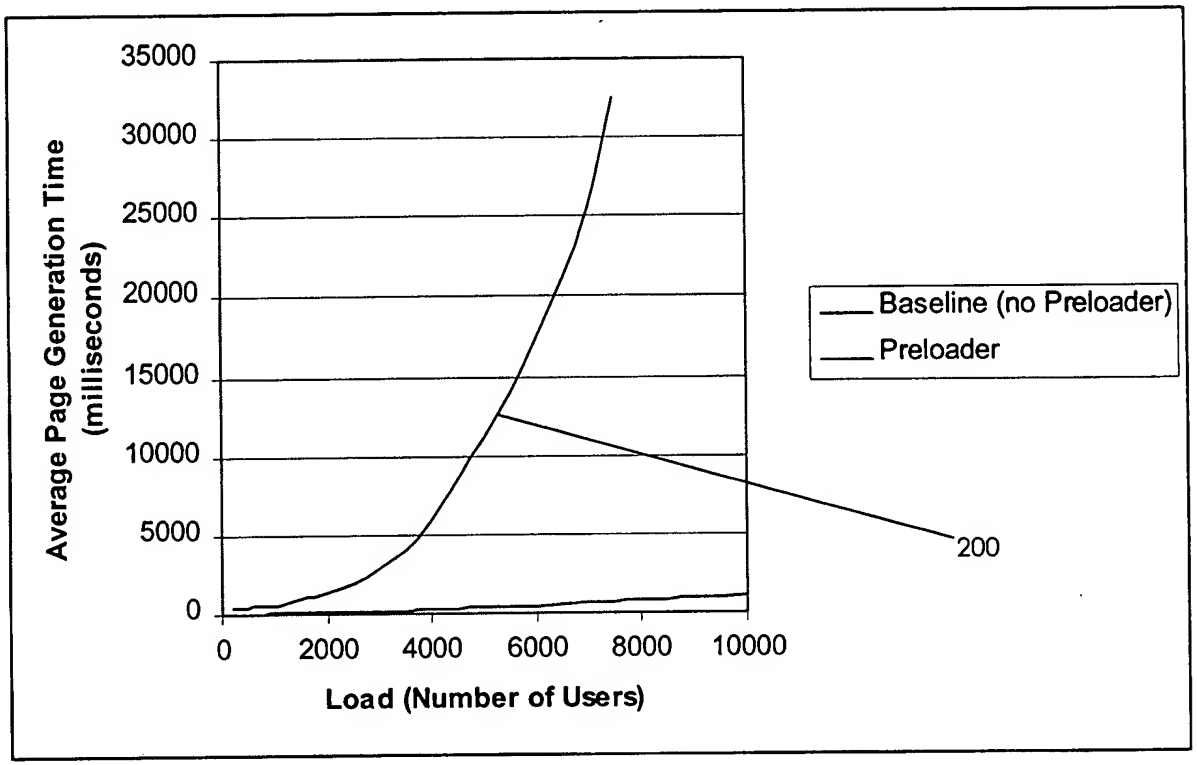

35000
30000
25000
20000
15000
10000
5000
0
Average Page Generation Time (milliseconds)
0
2000
4000
6000
8000
10000
Load (Number of Users)
Baseline (no Preloader)
Preloader
200

Fig. 2

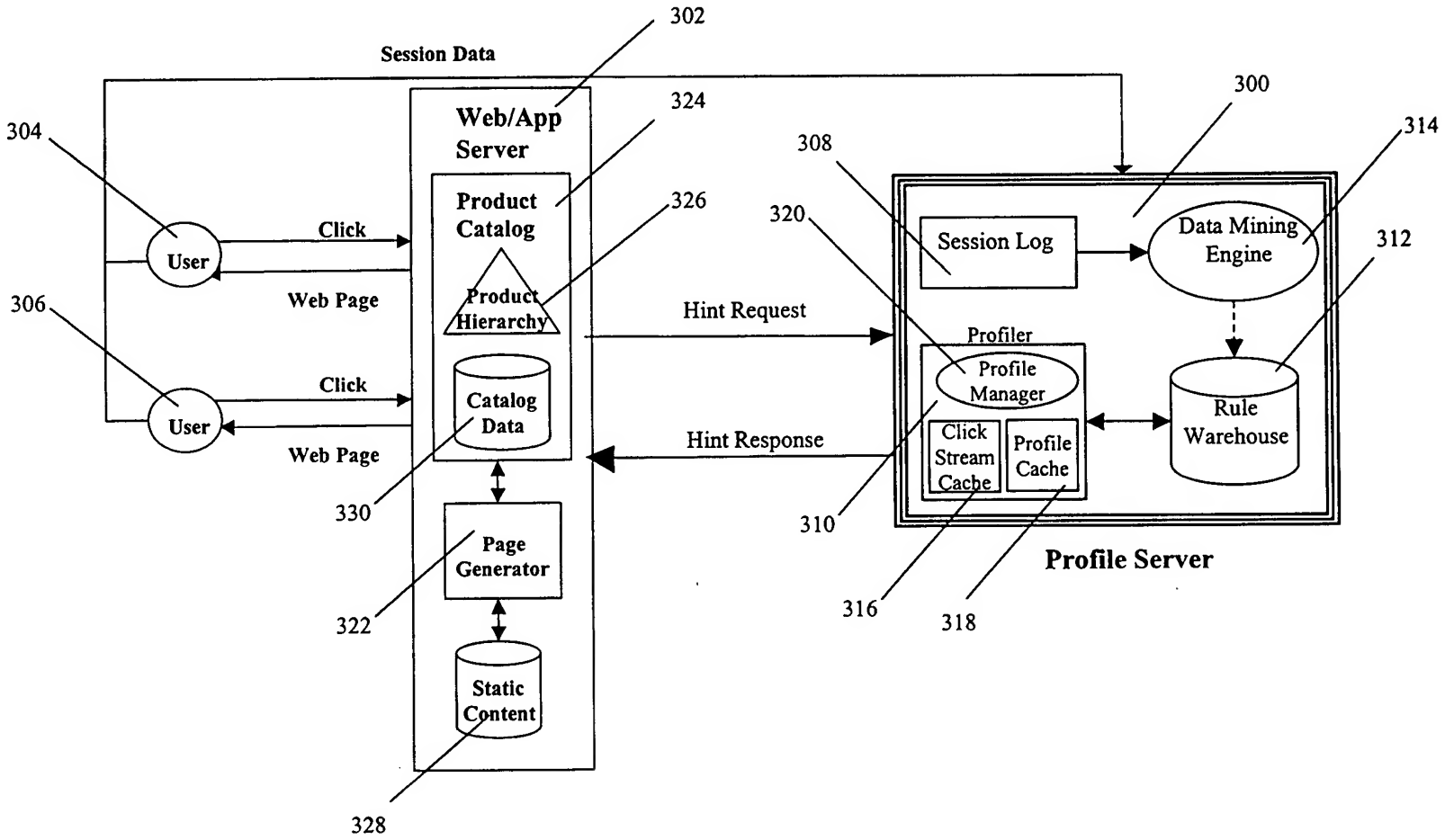

302
Session Data
300
Web/App Server
324
304
308
314
Product Catalog
326
320
Click
User
Session Log
Data Mining Engine
312
Web Page
Product Hierarchy
Hint Request
306
Profiler
Click
Profile Manager
Catalog Data
Rule Warehouse
User
Click Stream Cache
Profile Cache
Hint Response
Web Page
330
310
Page Generator
Profile Server
316
318
322
Static Content
328

Fig. 3

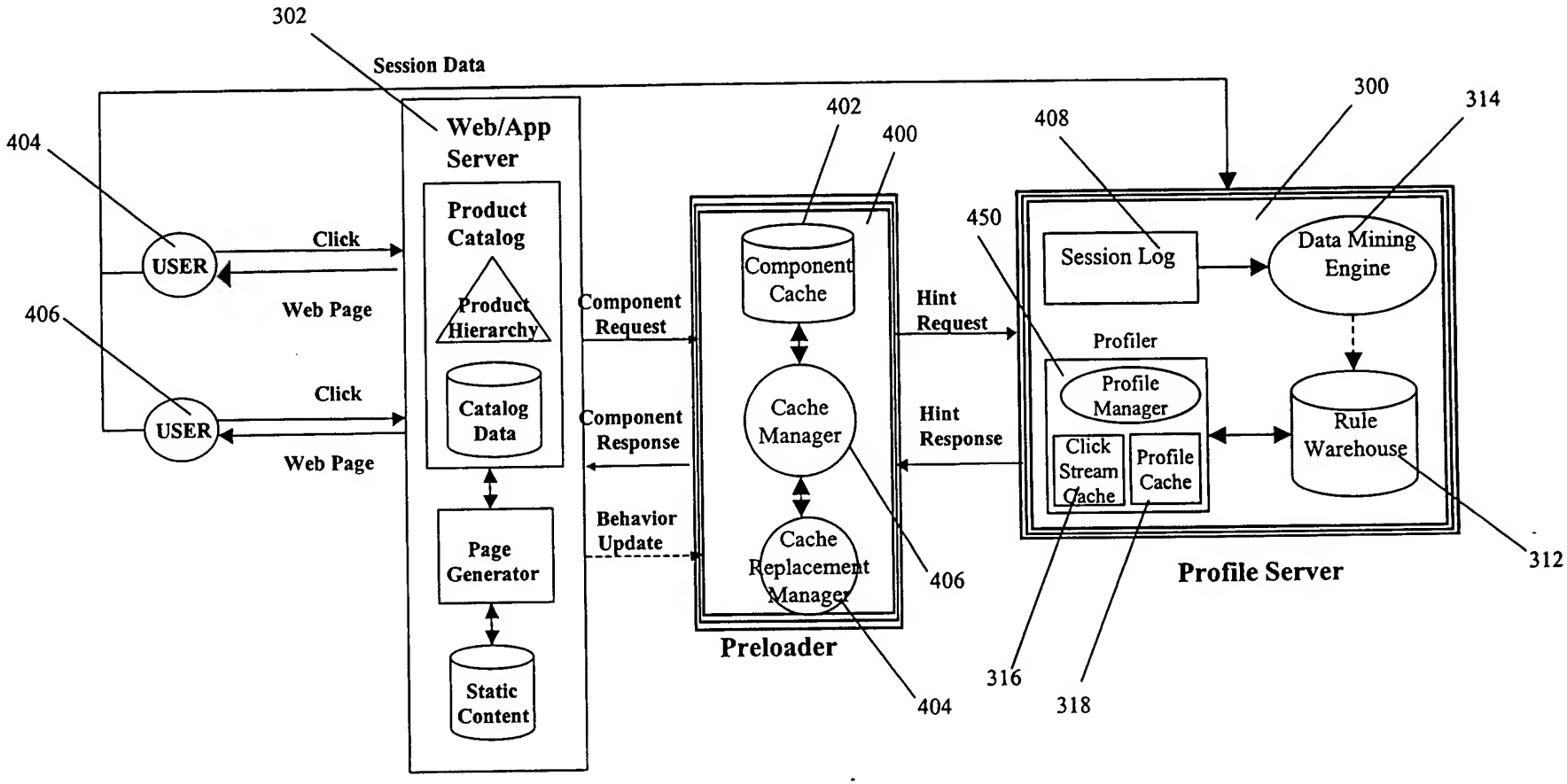

302
Session Data
Web/App Server
Product Catalog
Product Hierarchy
Catalog Data
Page Generator
Static Content
404
USER
Click
Web Page
406
USER
Click
Web Page
Component Request
Component Response
Behavior Update
402
400
Component Cache
Cache Manager
Cache Replacement Manager
Preloader
404
406
Hint Request
Hint Response
450
408
300
314
Session Log
Data Mining Engine
Profiler
Profile Manager
Click Stream Cache
Profile Cache
Rule Warehouse
Profile Server
312
316
318

Fig. 4

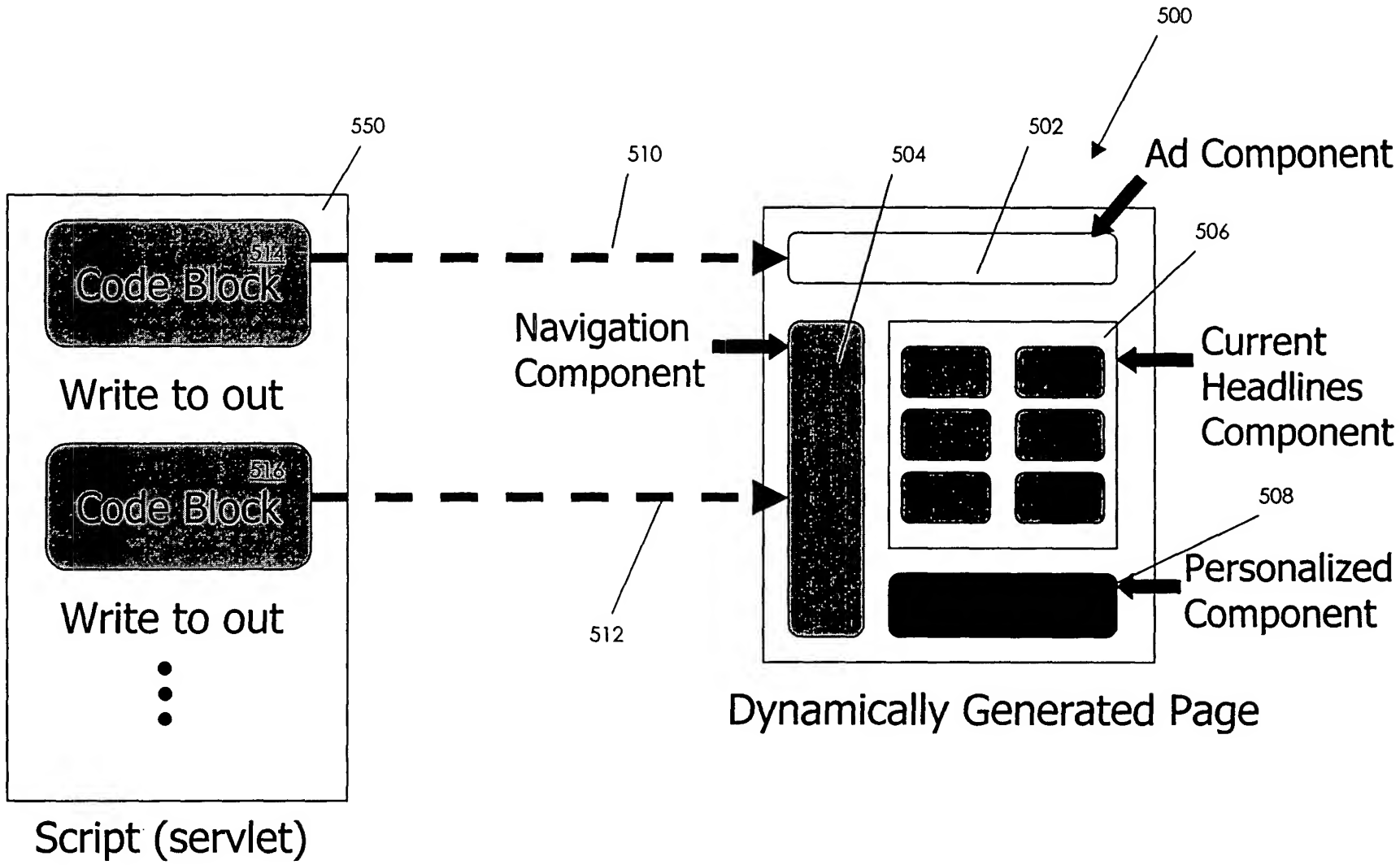

500
550
502
Ad Component
510
504
506
Code Block
514
Navigation
Component
Current
Headlines
Component
Write to out
Code Block
516
508
Personalized
Component
512
Write to out
Dynamically Generated Page
Script (servlet)

Fig. 5

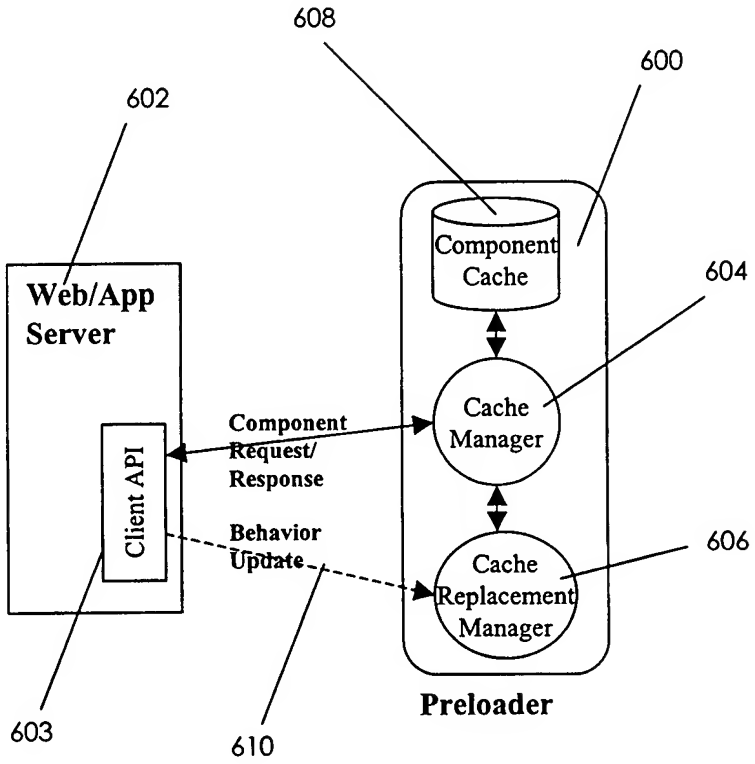

608
600
602
Component Cache
604
Web/App Server
Cache Manager
Component Request/ Response
Client API
Behavior Update
606
Cache Replacement Manager
603
610
Preloader

Fig. 6

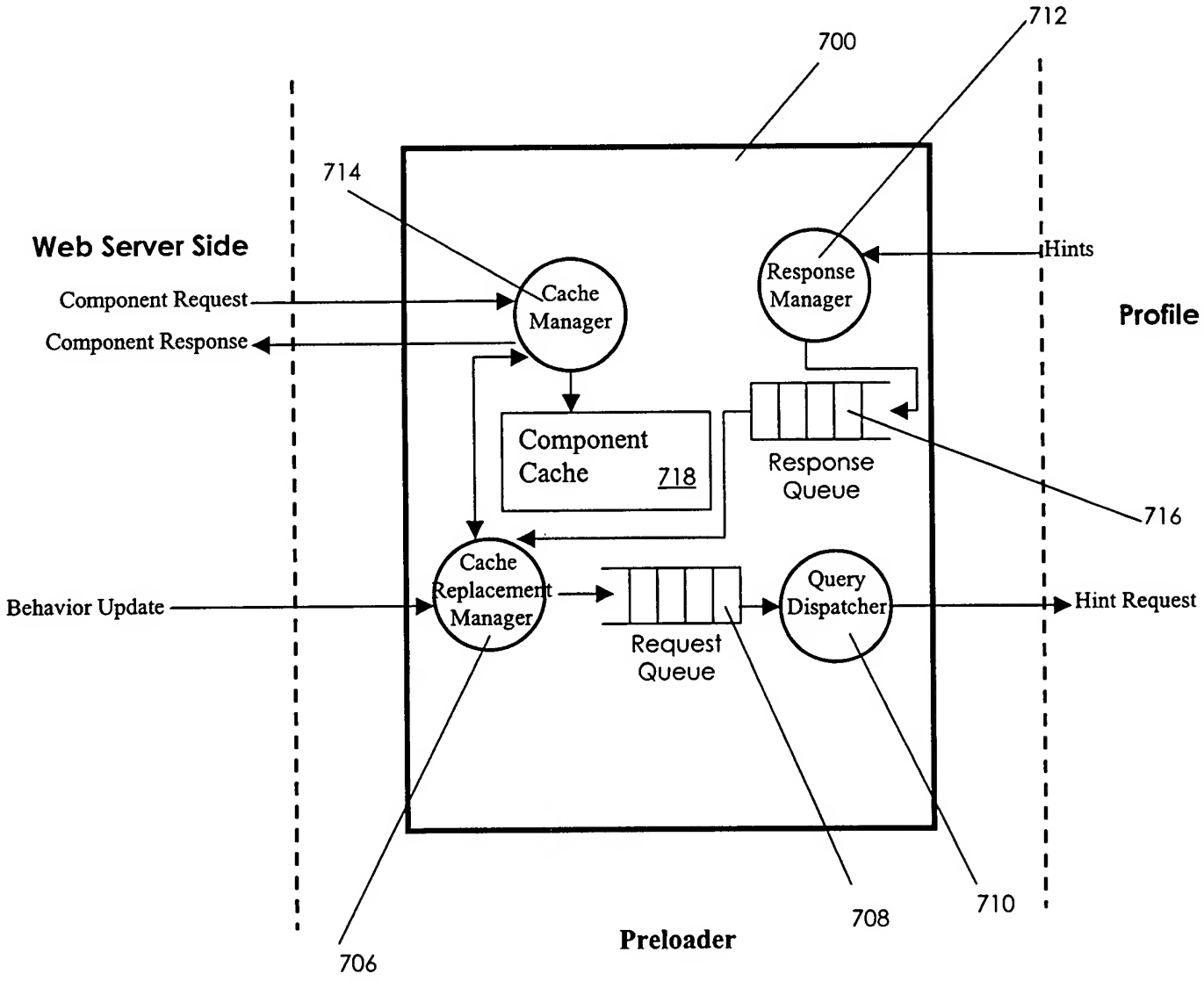

700
712
714
Web Server Side
Component Request
Component Response
Cache Manager
Response Manager
Hints
Profile Server Side
Component Cache 718
Response Queue
716
Behavior Update
Cache Replacement Manager
Request Queue
Query Dispatcher
Hint Request
706
708
710
Preloader

Fig. 7

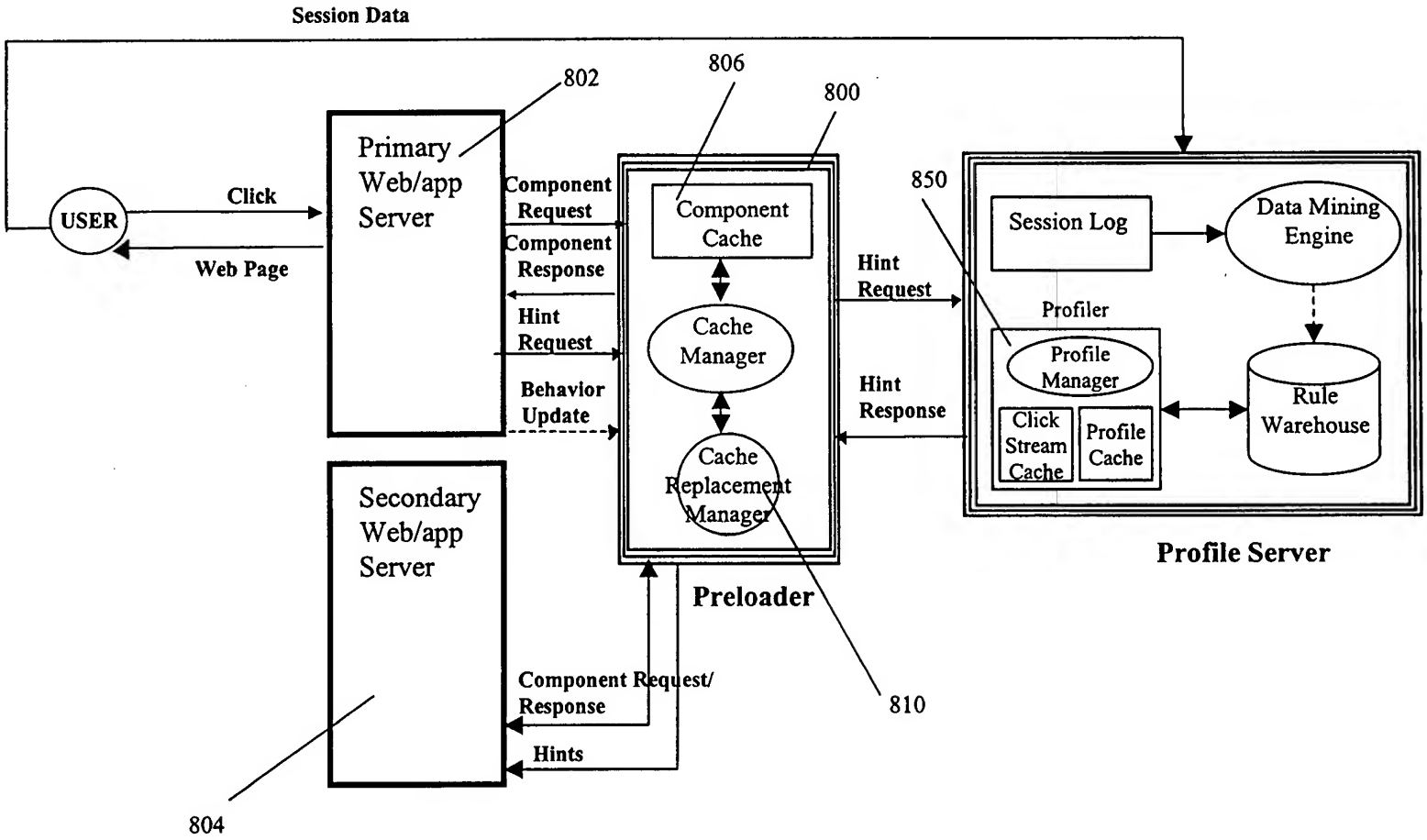

Session Data
802
806
800
Primary Web/app Server
USER
Click
Web Page
Component Request
Component Response
Hint Request
Behavior Update
Component Cache
Cache Manager
Cache Replacement Manager
Preloader
Hint Request
Hint Response
850
Session Log
Data Mining Engine
Profiler
Profile Manager
Click Stream Cache
Profile Cache
Rule Warehouse
Profile Server
Secondary Web/app Server
Component Request/ Response
Hints
804
810

Fig. 8

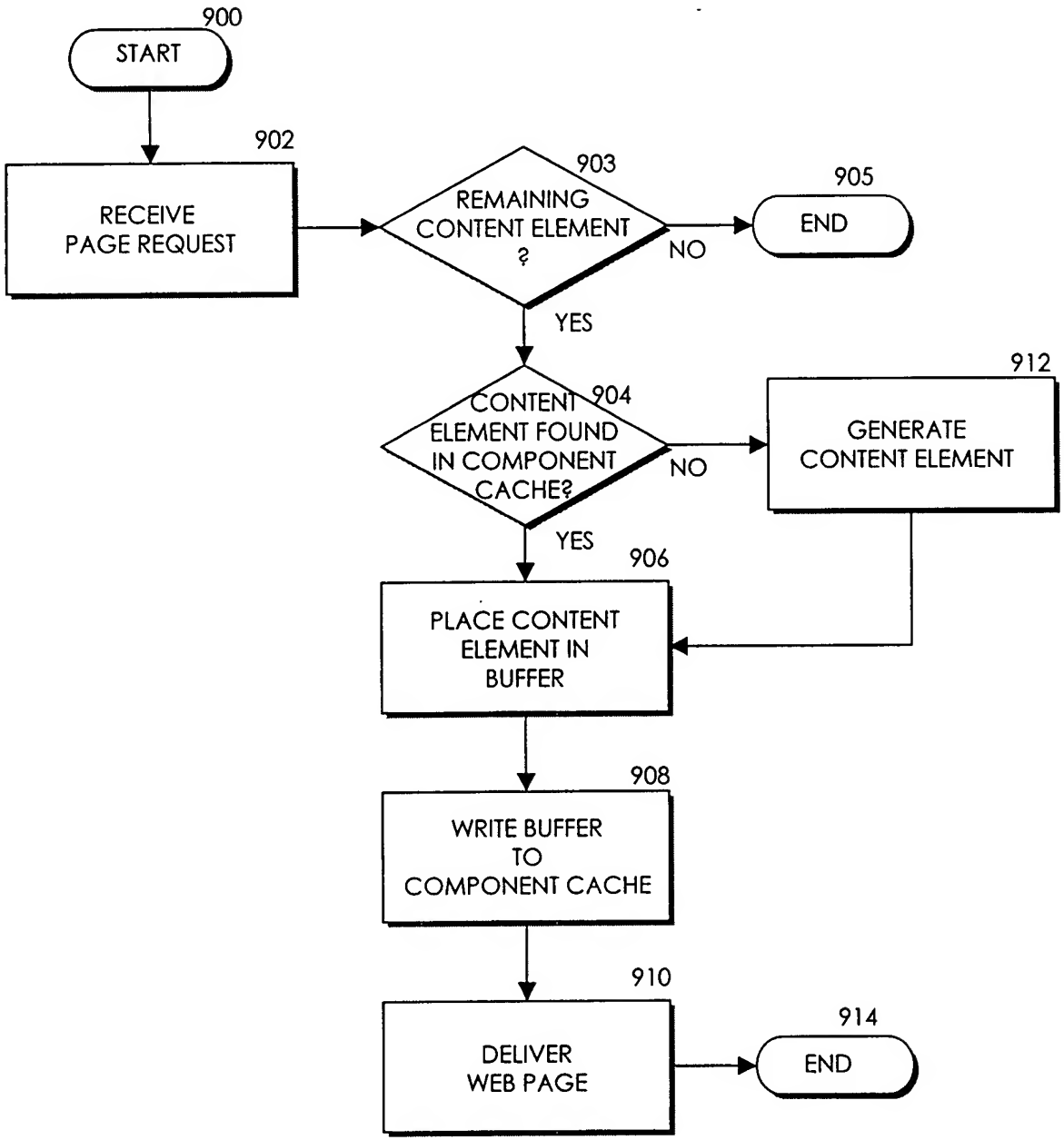
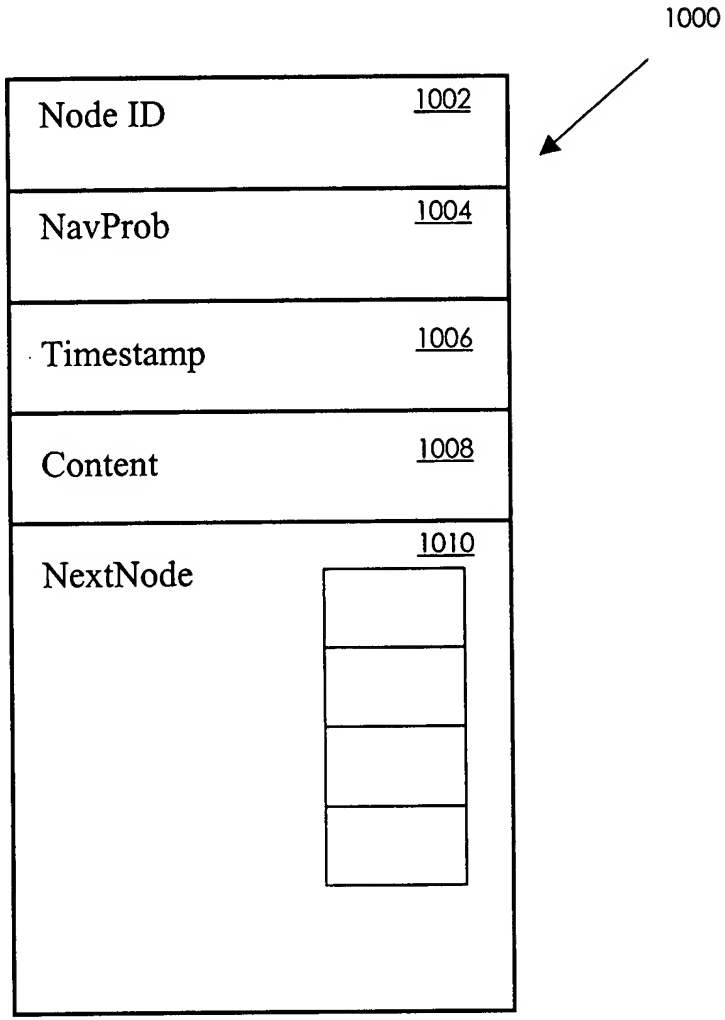

900
START
902
RECEIVE PAGE REQUEST
903
REMAINING CONTENT ELEMENT ?
NO
905
END
YES
912
CONTENT ELEMENT FOUND IN COMPONENT CACHE?
904
NO
GENERATE CONTENT ELEMENT
YES
906
PLACE CONTENT ELEMENT IN BUFFER
908
WRITE BUFFER TO COMPONENT CACHE
910
DELIVER WEB PAGE
914
END

Fig. 9



Content Element Node

Fig. 10

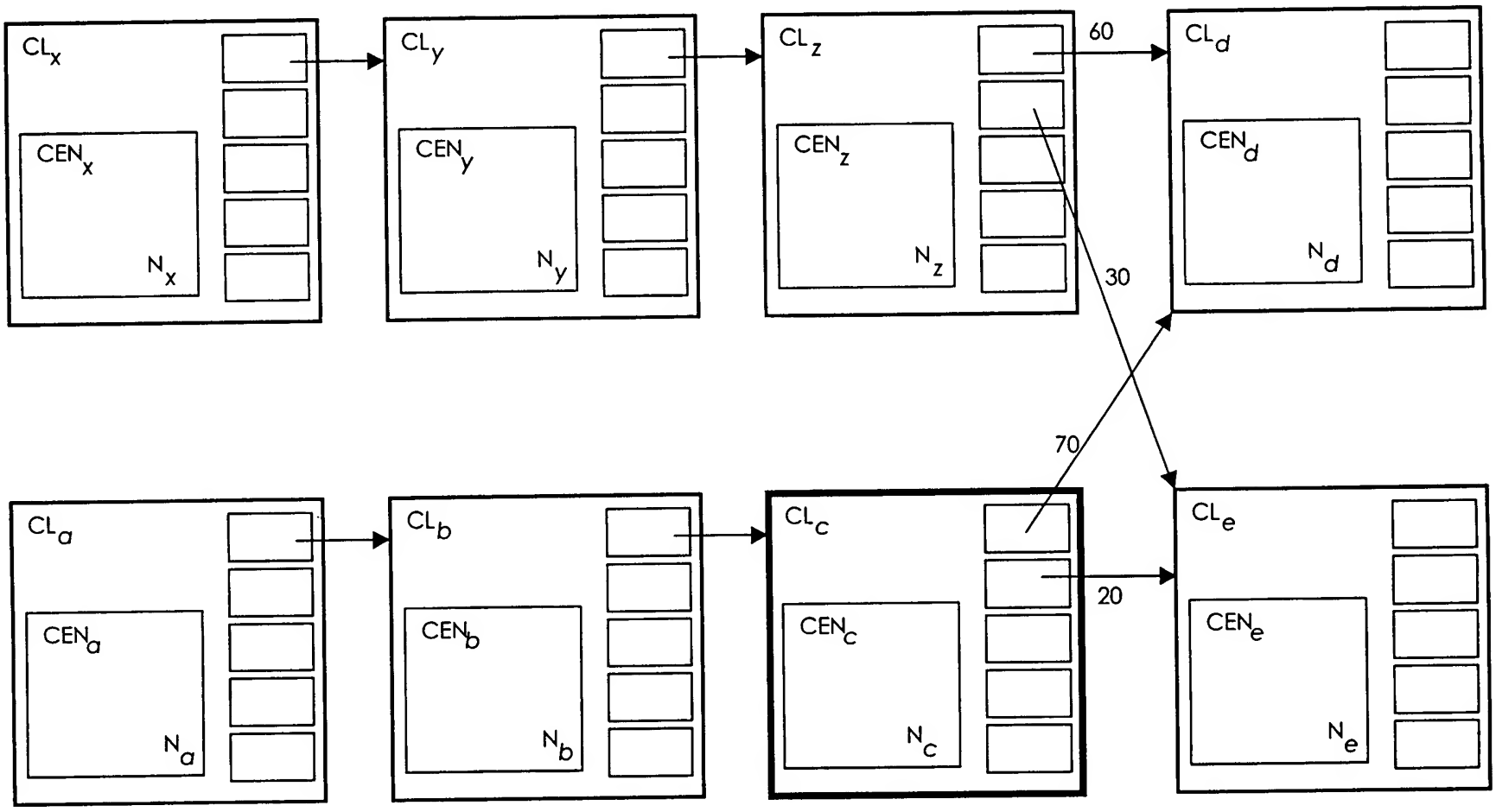

CL_x
CEN_x
N_x
CL_y
CEN_y
N_y
CL_z
CEN_z
N_z
60
CL_d
CEN_d
N_d
30
70
CL_a
CEN_a
N_a
CL_b
CEN_b
N_b
CL_c
CEN_c
N_c
20
CL_e
CEN_e
N_e

Fig. 11

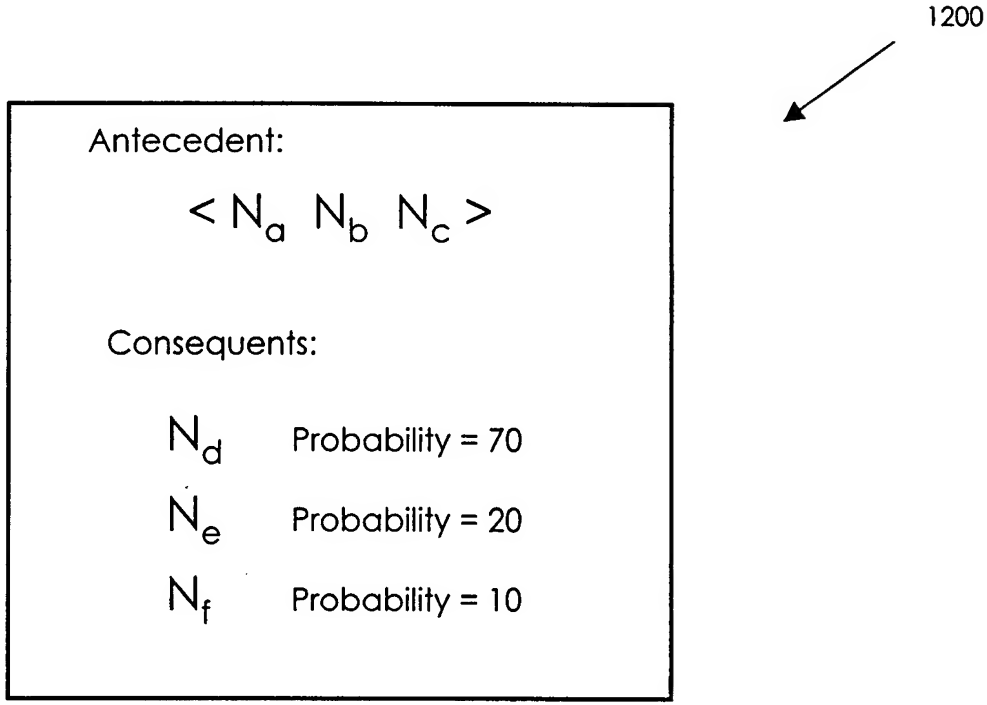

1200
Antecedent:
< N_a N_b N_c >
Consequents:
N_d Probability = 70
N_e Probability = 20
N_f Probability = 10

Fig. 12

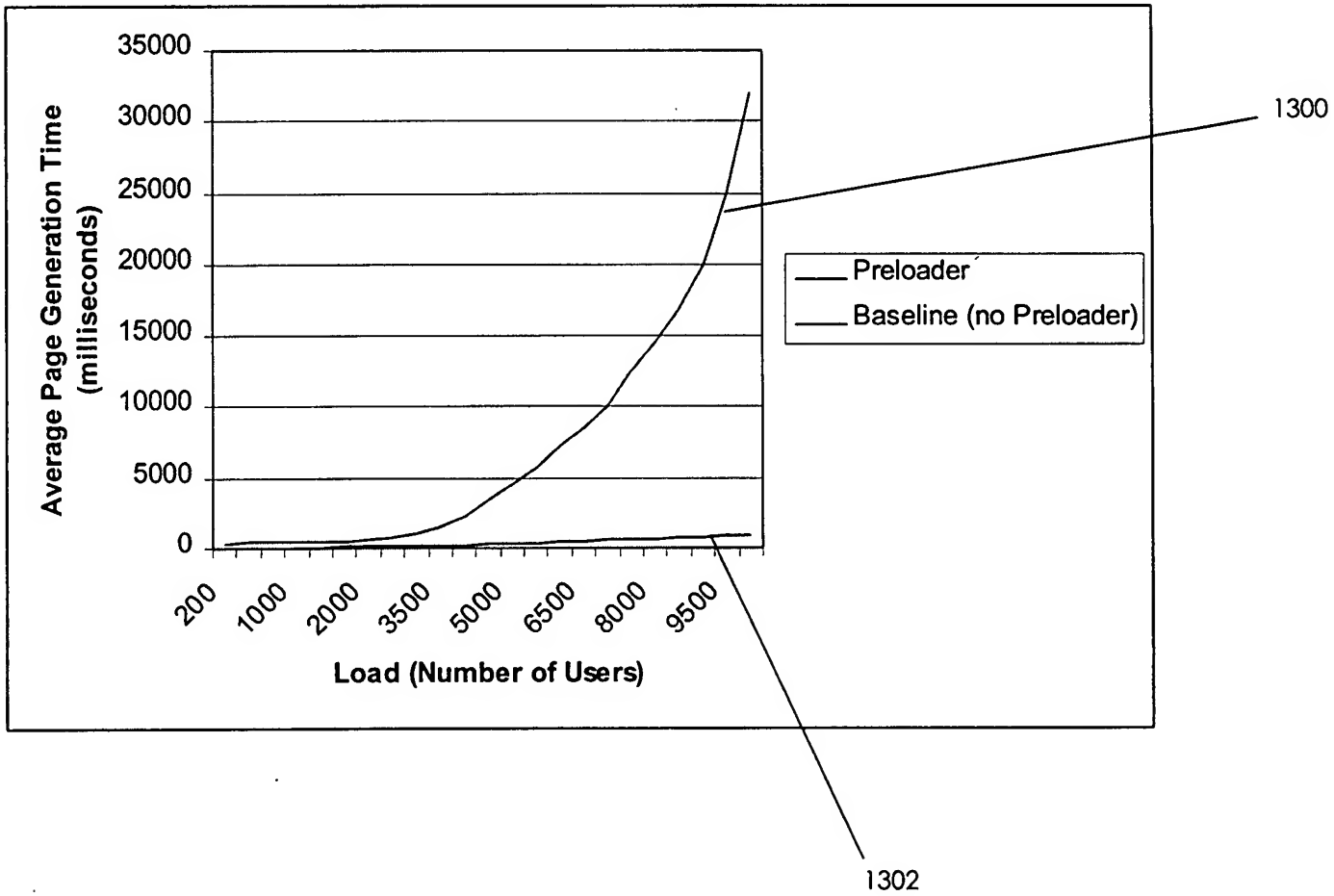

35000
30000
25000
20000
15000
10000
5000
0
Average Page Generation Time (milliseconds)
200
1000
2000
3500
5000
6500
8000
9500
Load (Number of Users)
Preloader
Baseline (no Preloader)
1300
1302

Fig. 13